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**THE EFFECTS OF TAXATION OF DIVIDENDS ON
SHARE VALUES:
EVIDENCE FROM THE DUTCH MARKET**

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Abstract:

This paper looks at the effect that dividend taxation has on share values adding to current literature on the relevance of taxation for a company's payout policy. Using a number of Dutch precedents, I was able to isolate the tax effects of payout policies. In the tested period (1990-2000) the Netherlands saw a change in tax regime for dividends, making it possible to isolate, and then study, the existence of a tax effect on the share value, by comparing how stocks with different payout policies responded to the tax law change. Firstly, I find that by choosing a particular payout policy, a Single Stock Holding Company stock management is able to create value by arbitraging an existing tax advantage. Secondly, I find that this created value disappears when the tax advantage disappears. From the findings in the paper, I conclude that the prevailing tax treatment in a country is relevant for share values. Companies should consider this tax effect when optimising their payout policy.

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1. Introduction

‘Understanding the role of taxes in capital structure, investment, and tax policy contexts requires an understanding of how investor tax rates on dividends influence asset values and rates of return’ (Harris, et al., 2001). The literature for dividend tax effects on common stock has produced many different theoretical and empirical models. Overall the extent to which shareholder-level taxes affect stock prices is a difficult empirical question, that has generated decades of research without reaching consensus (Ayers, et al., 2002). Showing the role, or not, of a tax effect on share values adds to the discussion of the relevance of a company’s dividend payout policy. Within the payout policy discussion, different camps are found, all looking at the effect on share value from a different angle. The bird-in-the-hand hypothesis believes that payout policy with high dividend yields increases share value. In this hypothesis the effect of taxes for investors is not neglected, but is seen as a secondary consideration. Signalling and agency costs are considered to be more important for increasing the share value. Shefrin & Statman follow this hypothesis and found explanations for preferences of cash dividends. The Modigliani & Miller Irrelevance hypothesis believes that the payout policy has no impact on the share value. There is a role for the tax effect on share value, but this tax effect is not ‘a sufficient conditions for certain payout policies to command a permanent premium in the market’ (Miller & Modigliani, 1961). Finally, the tax effect hypothesis believes that high dividends decrease share value. In this hypothesis the tax effect plays an important role in deciding which payout policy a company has. Elton, Gruber and Blake (2005) show the effect of a price decrease as the tax policy changes. The three camps all admit the existence of a tax effect on the share value, but disagree as to its importance and magnitude. This paper investigates the existence and magnitude of a tax effect on the share value, which helps improve our understanding of the role of taxes, within current research on the payout policy relevance.

All studies on the existence of the tax effect on share value have looked at the effect from two perspectives; (1) the relation between dividend yield and stock returns (Litzenberger & Ramaswamy, 1979; Rosenberg & Marathé, 1979) (2) the behaviour of stock prices on ex-dividend day (Lamdin & Hiemstra, 1993; Barclay, 1987; Elton, Gruber, & Blake, 2005). Although some studies find a tax effect, these are often criticized. Miller & Scholes (1982) argue that the positive yield relation, often described

as the tax effect, is just an information effect. In this paper another angle is used to find the existence of a tax effect on share value. This study investigates the role of tax on the stock value, by analysing a precedent that was available in the Netherlands. In 2001 a change in tax policy, the 'wet IB 2001', was applied in the Netherlands, where dividends, from this point onwards, were taxed at the same tax rate as capital gains. Prior to this, the Netherlands had a progressive tax system, where dividends were taxed at a higher tax rate than capital gains. This paper analyses five listed Single Stock Holding Companies ("SSHCs") that held an interest in an, also listed, Subsidiary company ("Subsidiaries"). These SSHCs were specially designed to create fiscal advantages under the old tax regime. The SSHCs had a holding structure, which made it possible for them to receive the Subsidiaries' dividends exempt from tax. Three of the five subsidiaries onward-distributed these dividends as (tax exempt) stock dividends to their investors. The SSHCs' sole activity was a holding of an interest in their respective Subsidiary. This, in combination with the fact that both the SSHCs and their respective subsidiaries were listed, makes it possible to study the pricing of two similar stocks, with different payout policies. After the change in tax policy in 2001, the fiscal advantage for the SSHC's disappeared, making it possible to measure the change in the tax effect on the stock price.

In this paper I am able to show the existence and magnitude of a dividend tax effect and place this in the discussion of the relevance of a company's payout policy. Earlier research done by the likes of Auerbach & Hassett, Amihud & Yakovlev and Ayers, Cloyd, & Robinson show the existence of a tax effect by doing either a cross country analysis, or a tax regime change analysis. I find similar results of a tax effect, but besides this, show that this tax effect can be exploited by choosing a different payout policy in times of a progressive dividend tax regime. These findings are in line with the catering view of dividend by Wurgler and Baker, and further relax the market efficiency assumptions made by Modigliani & Miller. This paper adds to the catering dividend view by showing that the 'dividend premium' created by a different payout policy is related to a tax effect. By connecting the tax effect findings with the companies payout policy, I show that companies can create a long term premium on their shares, which is contradictory to the findings of Modigliani and Miller, and other proponents of the bird-in-the-hand theory.

First the literature background will be analysed looking at the different theories and empirical evidence for the tax effect. As this paper specifically tests the tax effect hypothesis, a deeper analysis on such theories is conducted in this part. Secondly, a description will be made of the Dutch precedent case, where the old and new tax policy is explained and the structure creating the fiscal advantage is explained. Thirdly, the research data will be provided and explained. The paper will analyse stock price data found in DataStream for all SSHC's and Subsidiaries. Fourthly, a description of the research methodology is provided. In the research methodology, three hypotheses are tested. The first analysis looks if there are price differences between the SSHC and Subsidiary stock. The paper finds that there is a constant price difference between each SSHC and its Subsidiary. This difference could be explained by differences in liquidity, the existence of a fiscal claim and/or the payout policy. The second analysis looks if the SSHC stocks with a different payout policies were trading at a premium prior to the change in tax regime. The paper finds that the payout policy of the SSHC was able to generate value for the stocks. The final analysis (analysis 3) looks at the share price development of both the SSHC and its Subsidiary from the announcement of the tax policy change in 1997 onwards, to see how the tax effect impacted the price difference. The paper finds that, as the market gained knowledge of a possible change in tax regime, the premium created by the payout policy turned into a discount, clearly demonstrating the existence of a tax effect.

2. Literature background

2.1. Policy pay-out effect discussion

Current research finds three camps trying to answer the question whether the payout policy changes the value of the firm's common stock. All camps find a different role for the tax effect. Brealey and Myers (2010), in their book principles of corporate finance, describe the three camps. The first camp, the conservatives, believe that investors prefer a higher dividend pay-out because this increases share value. This view does acknowledge tax effects, but argues that other factors outweigh this effect. This is also known as the 'bird-in-the-hand' hypothesis. The second school is the 'middle-of-the-road-party', who believe the payout policy is irrelevant for share value. In a world with taxes, they believe shares will go back to equilibrium in the long run, making the payout policy irrelevant. The final school, they refer to as the radical left who believe in the tax effect hypothesis, where high-dividend payout decreases share price. In this

hypothesis, it assumed that taxes have an inverse effect on the share value. This background literature will be described more in depth.

2.1.1. Bird-in-the-hand hypothesis

‘In a world of uncertainty and imperfect information, dividends are valued differently to retained earnings (or capital gains). Investors prefer the “bird in the hand” of cash dividends rather than the “two in the bush” of future capital gains’ (Al-Malkawi, et al., 2010). In this hypothesis it is believed that investors prefer dividends to capital gains because they reduce uncertainty over future cash flows and reduce the cost of capital. Baker, Nagel and Wurgler find that investors prefer high-dividend stock for mental accounting reasons, even when they find a significant tax effect, where ‘high-tax households are more likely investors than low-tax households to withdraw dividend income’. This points to the fact that the role of a tax effect is outweighed by other effects, such as mental accounting. The importance of this tax effect differs over time, as Baker & Wurgler (2004) find in an earlier paper. In the paper they formalize the catering view of dividends, which states that dividends are highly relevant for share price, but in different directions, and at different times. Graham and Kumar (2006) found evidence of dividend yield preferences that increases with age and decreases with income, which is consistent with age and tax clienteles. Here again it is assumed that there is a tax effect on the share price, but this is outweighed by a clientele effect. Shefrin and Statman (1983) look at the dividend preference from a behavioural perspective following the theory of self-control by Thaler and Shefrin, and the prospect theory of Kahneman and Tversky. They find that the inverse effect of tax is outweighed by preference for high-dividend stocks. ‘The higher tax payments resulting from the preference for dividends can be interpreted as a price paid for self-control, segregation, regret reduction, and possibly all three’ (Shefrin & Statman, 1984). The final conservative arguments are derived from the agency cost theory. Rozeff (1982) finds that investors should prefer high dividends, as this withholds managers to spend the money on bad projects. In conclusion; most of the empirical research in accordance with the bird-in-the-hand hypothesis find the existence of a tax effect, but the importance of this effect is outweighed by other factors increasing the share value.

2.1.2. Middle-off-the-road

The second camp, described by Brealey and Myers (2010), is the ‘middle-of-the-road party’. This group of researchers believes there to be no payout effect on the share price. This view finds its roots in a paper crafted by Modigliani and Miller, in which they discuss the capital structure irrelevance proposition. The paper concludes that a company’s value is independent of the way it chooses to finance its investments or distributes dividends. For this view to hold they assume a world without taxes, transaction costs, or other market imperfections. In the 1961 Modigliani and Miller paper ‘Dividend policy, growth, and the Valuation shares’, this theory of dividend payout irrelevance is reconfirmed. However, we live in an imperfect world, in which there are taxes. After first looking at the theory in a perfect market without taxes, Modigliani and Miller later abandon the assumption of a perfect capital market, looking at market imperfections. The only market imperfection they said to be even remotely ‘capable of producing a constant premium or discount is the substantial advantage accorded to capital gains as compared with dividends under the personal income tax’ (Miller & Modigliani, 1961). But they argue that the clientele effects disrupts the capability. In the closing speech at the Annual Meeting of the American Finance Association, Miller clearly pointed out to ‘keep in mind that a "clientele effect" is also at work in the market for shares. The high dividend paying stocks will be preferred by tax exempt organizations and low income investors; those stocks, yielding more of their return in the form of capital gains, will gravitate to the taxpayers in the upper brackets’. Miller argues that even though differences in taxes can generate short price changes, in the long run, constant premiums are not possible due to the clientele effect. This argument was first pointed out in Modigliani and Millers 1961 paper:

If, for example, the frequency distribution of corporate payout ratios happened to correspond exactly with the distribution of investor preferences for payout ratios, then the existence of these preferences would clearly lead ultimately to a situation whose implications were different in no fundamental respect from the perfect market case. Each corporation would tend to attract to itself a ‘clientele’ consisting of those preferring its particular payout ratio, but one clientele would be entirely as good as another in terms of the valuation it would imply for the firm.

Kalay (1982) studied this clientele effect and found results consistent with a tax effect and a tax induced clientele effect, strengthening Miller's speech. Elton and Gruber also looked for the existence of a clientele effect in marginal stockholder rates. First of all, they provide 'evidence in support of the clientele effect, suggesting that a change in dividend policy could cause a costly change in shareholder wealth' (Elton & Gruber, 1970). Secondly they find that 'stockholders in high tax brackets prefer capital gains over dividend income relative to lower tax brackets'.

2.1.3. 'Radical left' tax effect hypothesis

The Final school analysed by Brealey and Myers (2010) are the 'radical left' who argue that firms should pay lower cash dividend whenever dividends are taxed more heavily than capital gains. This implies that dividend taxation has an inverse effect on the share value, which contradicts with Modigliani & Millers irrelevance proposition. Looking at the taxation effect of dividends, researchers have tried to identify the effect in two ways.

The first group of researchers looked for a short term effect on ex-dividend days, hypothesising a share price decrease smaller than the dividend pay-out. The argument for a share price decrease comes from the fact that capital gains and dividends are taxed at different levels. On ex-dividend days, 'the theory suggests that if taxes affect investors' choices, the fall in stock price should, in general, be less than the dividend, and the drop could be used to infer marginal tax rates' (Elton, et al., 2005). Many researchers have tested this in an event study and found results in line with the theory. Researchers such as Elton & Gruber (1970), Litzenberger & Ramaswamy (1979), Lamdin and Hiemstra (1993) found such price decrease on ex-dividend days. Elton, Gruber and Blake (2005) do not only show the effect of a price decrease, but also show that the effect changes as the tax policy changes. Barclay (1987) even found a price decrease equal to the dividend pay-out before adoption of income taxes. After 1913, income taxes were applied and such effect was not found, which further supports the theory.

The ex-dividend day theory also gained some critiques over the years. Most of the studies giving critique argue that not only tax factors, but also other factors may play a role in the share price decrease. Shaw (1991) finds that his dataset is not significantly impacted by the tax reform act of 1986, suggesting that there is not only a tax effect,

but there are other effects as well. Kalay (1982) finds a non-linear relation between the price drop and dividend yield, arguing that the predictable clientele trading could eliminate the observable tax effect.

The second group of researchers, looking at the tax effect, have tried to explain that dividends are penalized relative to capital gains if there is a difference in taxation between the two. If this were to be the case, researchers would find high-dividend yields to be priced at a discount relative to low-yield dividend stocks. Rosenberg and Marathe (1979) and Litzenberger and Ramaswamy (1982) find a significant relationship between the dividend yields and common stock returns, implying high-dividend yields to be priced at a discount. Litzenberger and Ramaswamy, however, are still unsure on whether the effect found is a tax effect or another omitted variable, other than the information effect. Miller and Scholes (1978) produced a paper giving huge critique on the findings of the former named researchers. The main concern is that these tests use short-run measures of dividend yield. Miller and Scholes find some of the short term tests traced to biases introduced by the dividend announcement effects. This critique came after Black and Scholes had researched the relationship between dividends and taxes and found no significant result in 1974.

2.2. Tax effect on share price

As can be seen, current literature on payout policy takes existence of a tax effect into consideration. But 'researchers have long debated the role of taxes in corporate financial policy' (Harris, et al., 2001). The middle of the roaders find that the tax effect will always be brought back to equilibrium, the bird-in-the-hand believe that the tax effect is outweighed by other effects and finally the radical left believe that the share price has an inverse effect on tax. In this part of the paper I will look at the empirical studies that have tried to look at the tax effect on share value.

2.2.1. Cross-country and regime change analysis

One of the ways of looking at the tax effect is by conducting a cross-country analysis. Harris, Hubbard & Kemsley (2001) looked at the magnitude of the tax effect by looking at different countries with different tax rates. They find that the tax effect is incorporated into the share price and 'cross-country variation in dividend tax rates is associated with predictable variation in the implied tax discount' (Harris, et al., 2001).

Ferris, Jayaraman & Sabherwal (2009) looked at the catering effect in an international setting. They find that investors 'extract payouts indirectly, by placing a high value on dividend paying firms'. This is in line with the bird-in-the-hand hypothesis, where investors prefer high-yield dividends. Finally Alzahrani & Lasfer look at the tax effect on ex-dividend days across different countries tax regimes. They conclude that dividend taxation is compounded in the share price.

Historically a lot of changes in tax policy have occurred globally, making it possible to use similar situations to test the tax effect on common stock price. Even with these instances different results have been found, consistent with the discussion described above. Auerbach and Hassett (2005) look at the Jobs and Growth Tax Relief Act of 2003 in the U.S. and find that the 'tax reduction boosted share prices and encouraged other activities, such as dividend payment, rather than to reduce the cost of capital.' This provides evidence that rejects the dividend irrelevance theory. In a later paper, they also looked at the effect in the run up to the presidential election of George W. Bush in 2004. They find 'that a higher probability of George Bush being re-elected (which they associated with a higher probability of the dividend tax cut being extended past 2008), reduced the positive valuation effect of the dividend yield' (Auerbach & Hasset, 2005). Chetty, Rosenborg & Saez also looked at the 2003 dividend tax cut. The results they find are inconclusive of a tax effect. Ayers, Cloyd & Robinson (2002) looked at the revenue reconciliation act 1993 in the U.S. In this act the individual tax rate on share values increased. They find that the negative firm stock price reaction is larger for high dividend yield firms. They conclude that their findings are 'consistent with the traditional view that firm dividend policy influences the extent to which tax rate changes affect share values' (Ayers, et al.). This paper also tests the tax effect by looking at a change in tax regime. Similar to Auerbach and Hassett, this paper does not look at the effect before or after the change, but looks at the effect in the run up to the regime change. This paper is unique to previous studies as it is able to compare listed pairs of stocks with a similar cash flows, but a different payout policies, staying constant during a change in tax regime. This makes it possible to isolate the tax effect, quantify the tax effect on the payout policy, and quantify the value development surrounding a change in tax-regime.

3. The case

This paper looks at five cases found in the Dutch market in the period from 1990 to 2001. All five cases consider a Single Stock Holding Company (SSHC) holding an interest in a Subsidiary company. Both the SSHC and the Subsidiary company stock were trading on the Dutch market. The fact that the SSHC held only a portfolio of listed Subsidiary stock makes it possible to compare the stock prices over the reference period. They should be perfectly correlated, as they are backed by the same real assets and cash flows (Jong, et al., 2005). The market found this not to be the case, sensing a form of mispricing. In this paper we investigate if the mispricing can be explained by the tax effect on the difference in the payout policy of the SSHC and the Subsidiary. It is important to understand the structure of the subsidiaries, as this made it possible for them to create the tax advantage with their payout policy. It is also important to understand the change in tax regime and how this cancelled out the purpose of the subsidiaries. The holding structure and tax regime are further explained.

3.1. Holding structure

The 5 SSHCs analysed in this paper are Calvé-Delft (CD), Moeara Enim (ME), Dordtsche Petroleum (DP), Maxwell Petroleum (MP) and Arnhemsche (Arn). All five are SSHCs that were invested exclusively in, respectively, Unilever (CD), Royal Dutch Shell (ME, DP, MP) and Akzo Nobel (Arn). At the start of the 19th century these subsidiaries were formed through a share-for-share transaction with their Subsidiary (Calvé-Delft, 2000). For Arnhemsche, this share for share transaction was effected in 1996. This transaction meant that SSHCs (e.g. CD) became holding companies with as sole asset an interest in the Subsidiary (e.g. Unilever). As holding companies owning a substantial interest in the Subsidiaries, the SSHCs were able to receive dividends from their Subsidiaries untaxed, through the way that they were structured. CD and ME were structured as a fiscal investment institution (fiscale beleggingsinstelling) within the meaning of Article 28 of the Dutch Corporate Income Tax Act 1969 (Wet op de vennootschapsbelasting 1969). DP, MP and Arn made use of the Participation Exemption, within the meaning of Article 13 of the Dutch Corporate Income Tax Act 1969.

Fiscal investment institution ('FII')

Investment institutions ('Fiscale Belegingsinstelling') have been introduced to make it possible for private investors to invest in markets that are normally not accessible for small investors. 'Investment institutions make it possible for private investors to spread their risks without making a difference between collective and private investing' (Raatgever, 2009). An FII is a form of investment institution. Companies with the status of an FII are subject to a corporate tax rate of 0%, provided that certain requirements are met. These regard the Fund's distribution of profits, its activities, leverage and shareholders. At least 75% of the fund's stock has to be in the hands of private investors. Two aspects of an FII make investing in them attractive for tax reasons. The first aspect is the distribution obligation as written in Article 28 part b. To qualify as an FII the SSHC has to distribute all its profits within 8 months of the closing book year (Vries & Vries, 2008-2009). Over the profits distributed, dividend tax has to be paid. As FII has a tax rate of 0%, all dividends received can be further distributed without deduction of any corporate income tax.

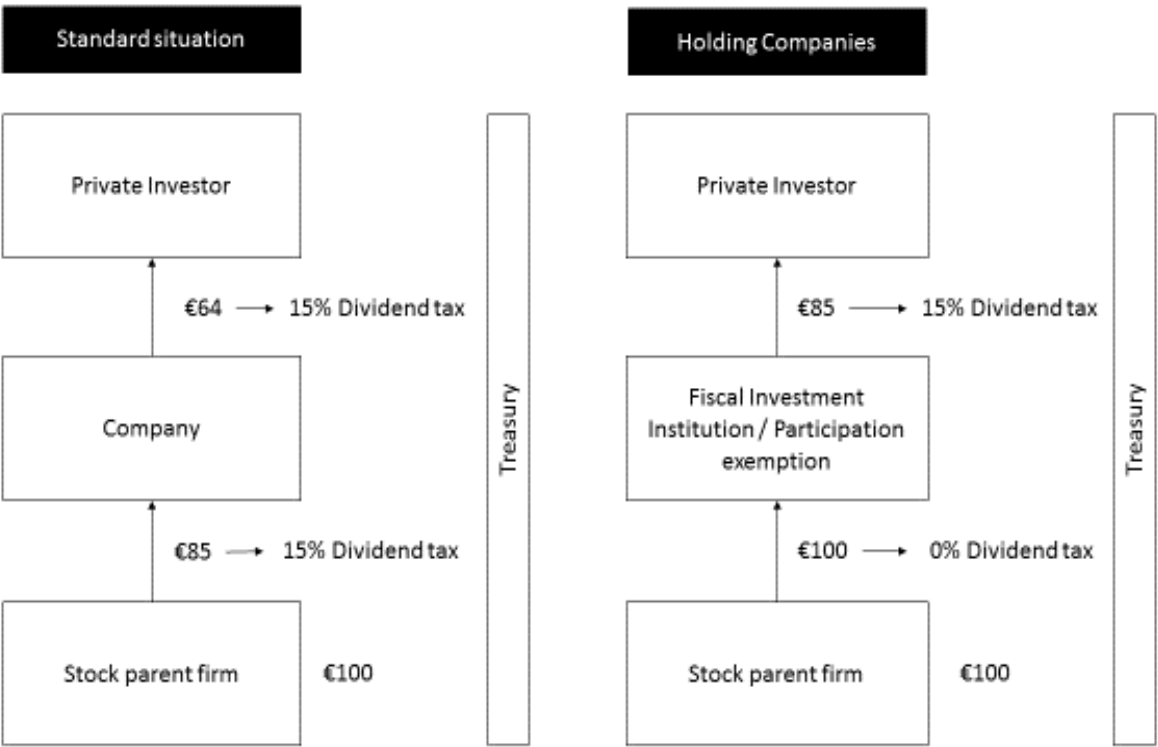
The second aspect making an FII attractive is the reinvestment reserve (herbeleggingsreserve) as written in article 4 BBI. A rule of thumb for FII is that private investors should not be punished for not investing in the Subsidiary stock directly (Raatgever, 2009). For private investors capital gains are not taxed and therefore the FII's capital gains are also free of tax. Gains from holding stock of the Subsidiary are credited to a reinvestment reserve and not taxed upon distribution. In an increasing stock market, this combination makes it possible for an FII to distribute stock dividends from its reinvestment reserve, instead of (taxable) dividends.

Participation Exemption

If a SSHC has a holding of 5% or more in a Subsidiary, it can make use of the participation exemption as defined in article 13 of the Dutch Corporate Income Tax Act 1969 (Jager, 2010). If a company has a participation exemption, then the SSHCs can enjoy dividends and capital gains from the Subsidiary free of tax. Instead of distributing these gains as dividends, the SSHCs decided to onward distribute these gains in the form of (tax exempt) stock dividends. This was a fiscal trick, as stock

dividend could be distributed in a tax exempt manner, whilst cash dividend would have been taxed as dividends. As the Dutch tax system was progressive with regards to dividends, and dividends were taxed more than capital gains, such a structure was attractive for private investors. They would receive more value than they would have if they had a direct investment in the Subsidiary. This was only possible because of the tax exemption. Figure 1 shows a graphical description of the structure of both forms compared the standard procedure.

Figure 1



3.2. Post tax and pre-tax situation explained

Important for this paper is to understand the change in tax regime, which makes it possible to analyse the tax effect. Before 2001, the Dutch tax regime saw dividends being taxed at a progressive rate. In some years this could lead up to 72% taxation (Vries & Vries, 2008-2009). In a progressive taxing system, investors are taxed at an average rate that rises depending on the investors' income. Distributing dividends thus was not attractive for investors, as a large part of the receipts went to the Netherlands treasury. At the same time, it was also possible to distribute the dividends in the form of a stock dividend. At the time stock dividends were not directly taxed. This made the

stock dividend paying subsidiaries more attractive for investors than the high dividend paying subsidiaries. The 2001 change in tax regime caused this advantage to be removed. From this moment onwards investors were taxed on a deemed income basis, where actual dividend levels became irrelevant and, instead, the value of the stock was the taxation criterion. Both dividends and capital gains were now taxed in a so-called “box 2”, where a yearly deemed annual return of 4% is expected, and taxed at a fixed rate of 30%. Thus, whether a stock pays a dividend or not, the tax will be the same and will always be $(4\% * 30\% =) 1.2\%$ of the value of the investments at the beginning of any calendar year.

4. Methodology and Data

4.1. Data

As described, to test the existence of a tax effect on payout policy, five Dutch precedents will be analysed. For all 5 cases the ‘daily adjusted share price’ and ‘number of shares outstanding’ data is retrieved from DataStream. DataStream has data available from 1973 up until the moment the SSHC were taken off the market. I was able to extract the necessary data for all of the Subsidiary companies and SSHCs, except for Arnhemsche. As Arnhemsche was listed on the stock exchange only in 1996, Arnhemsche has stock data available only from 1996 up until it was delisted in 2001. All subsidiaries were Euronext traded stock. Both Unilever and Royal Dutch Shell had two different stocks outstanding, trading in different markets, but for both Unilever and Royal Dutch Shell the Euronext (Dutch) traded stock data is used, as these are the stock held by their SSHC. The analyses performed in this paper use data from 1990 onwards (as noted, with the exception of Arn).

Calvé-Delft and Moeara Enim did not only hold stock of the Subsidiary company, but also held bonds. The percentage of bonds on the balance sheet were found from annual report data from the company.info database. The Maxwell Petroleum annual reports were also retrieved from company.info. From the annual reports, the theoretical ratio for Dortsche Petroleum to Royal Dutch (1:1) was retrieved.

For the regression analysis, market index data and liquidity data is needed. Market index data for the AEX from 1992 onwards was retrieved from Yahoo Finance. As in all

the cases the respective stocks traded on the Dutch Stock Exchange, this was assumed the best index to use. Data for liquidity measures is retrieved from the Compustat Global Security database. For the liquidity measures, trading volume data and shares outstanding data is used. For Calve-Delft, trading volume data is only available from 1999 onwards. For the other SSHC trading volume, data was available from 1994 onwards. An overview of the data is found in the appendix.

Data correlation

To find if there exists a tax effect on the payout policy, and its relevance, this paper looked at the share price development between the 'SSHC stock' and the 'Subsidiary stock' for each of the cases described. For three of the five case studies, the SSHCs are merely holders of Subsidiary stock. On their balance sheet, this is the only asset generating revenue. The other two cases, Calvé-Delft (CD) and Moeara Enim (ME), the SSHC held bonds, besides the interest in the Subsidiary on their balance sheet. For both CD and ME the interest in the Subsidiary company accounted for more than 99.5% of the assets on the balance sheet. As the existence of bonds in the balance sheet was so small, I have assumed their effect to be negligible. From this assumption, we believe that the share price for the subsidiaries is fully driven by the interest in the Subsidiary. As the sole asset of the SSHCs is an interest in the Subsidiaries, a close to a 100% correlation is expected between the stocks. Table 2 shows the correlation between the two prices on a yearly basis.

Most of the time there is a significant correlation of >95%. What can also clearly be seen is that the correlation in the final years is low for all cases except for Moeara Enim and Calve-Delft. The low correlation in the final years could be explained by the fact that for all SSHCs there were take-over bids in this period, due to the fact that the SSHCs had lost their (tax related) purpose. These bids effected the SSHC share price and not that of the Subsidiary company. The acquiring firm in a corporate takeover, almost invariably, pays a substantial premium over market price for the stock of the target company (Stout, 1990). For Dordtsche Petroleum and Maxwell petroleum a low correlation is found in 1994. This low correlation could be explained due to the fact that, in this year, Dordtsche started to distribute dividends in the form of stock. The change in dividend policy could have probably made the two SSHC stocks more interesting and affected only their share price, relative to the Subsidiary share.

Table 2

This table shows the correlation between the daily stock price of the SSHC and the theoretical value. The theoretical value was calculated from $P_{sub} * \left(\frac{V_{hold}}{V_{sub}}\right)$. Arnheemsche Maatschappij entered the stock exchange starting 1996.

Year	Dordtsche Petroleum	Moeara Enim	Calvé- Delft	Maxwell Petroleum	Arnheemsche Maatschappij
1990	.920	.938	.926	.919	N.A.
1991	.987	.980	.946	.978	N.A.
1992	.937	.891	.628	.894	N.A.
1993	.995	.989	.884	.980	N.A.
1994	.228	.679	.912	-.403	N.A.
1995	.928	.961	.831	.945	N.A.
1996	.984	.985	.615	.958	.982
1997	.988	.984	.973	.920	.976
1998	.981	.982	.961	.944	.973
1999	.988	.861	.840	.822	.859
2000	.744	.904	.973	-.058	-.113

4.2. Pricing relation

The first step of our analyses is to see, if, in times when a progressive tax system existed for dividends, value could be created with a different payout policy. Modigliani & Miller found that the company price is independent of the payout policy and the dividend policy is irrelevant. This paper finds a case where it is possible to measure the difference in share price between two stocks trading on the Dutch stock exchange, with similar cash flows, but with a different payout policy. In Modigliani & Millers frictionless efficient market this difference in price would be zero. If the company price were independent of the payout policy, and there are no other limitations to arbitrage, the clientele effect should cause the SSHCs to be equally priced to their underlying Subsidiary. In the catering view of dividends, Wurgler & Baker find limits to arbitrage that cause a price difference, meaning that dividend paying firms start trading at a premium. They find on average a 20% ‘dividend premium’ for firms paying dividend.

With dividends and capital gains having different tax rates before the change in tax regime, the SSHCs made clever use of this, by adjusting their payout policy. DP, MP and Arn stock holdings were taxed differently for investors, as they distributed stock dividends. The SSHC stocks were especially interesting for ‘highly taxed individuals’, whilst the Subsidiary stock were interesting for ‘un- or lowly taxed individuals’. These two groups are often seen as the main clientele groups. If Modigliani & Miller are correct, we would expect the Subsidiary and SSHC stocks to be equally priced. Still in the market it was found that this was not the case. Literature finds several explanations that could cause the difference in price. Corten (2003) says that the price difference can be created by the tax advantage of giving out dividend stock but do not empirically prove this. Hoogervorst (2006) finds that holding funds in Belgium and the Netherlands, with similar structure, traded at discount due to illiquidity. And finally the Calve Delft and Maxwell Petroleum annual report stated that a discount was created because of the Fiscal Claim that was hanging over the funds. To test if the SSHCs trade at a different price, a method used by Rosenthal and Young is used to find mispricing between dual listed stocks. ‘A dual-listed company involves two companies incorporated in different countries contractually agreeing to operate their businesses as if they were a single enterprise, while retaining their separate legal identity and existing stock exchange listings. In integrated and efficient financial markets, stock prices of the twin pair should move in lockstep’ (van Dijk). The dual-listed company’s structure with similar cash flows backing two different entities is comparable to the cases described in this paper.

Rosenthal and Young (1990) assume the following processes for the price formation of each security.

$$P_{hold} = V_{hold} * (\psi) + \mu$$

$$P_{sub} = V_{sub} * (\psi) + \nu$$

Where P_{hold} and P_{sub} are the market prices for the SSHC and Subsidiary company on the exchange at time t . ψ is the true aggregate AEX value of the group at time t . V_{hold} and V_{sub} are the ratios from which the prices can be derived from the market value. ‘ μ And ν represent deviation from the true value of a share where, if the prices are unbiased, estimates these should be equal to zero’ (Rosenthal & Young, 1990). Rearranging the formula and eliminating ψ you find:

$$P_{hold} \left(\frac{V_{hold}}{V_{sub}} \right) - P_{sub} = \varepsilon$$

Where ε is seen as the mispricing between the SSHC stock and the Subsidiary stock. The $\frac{V_{hold}}{V_{sub}}$ ratio is constant over time and states the theoretical ratio at which the shares should always be trading. In this paper a different calculation is used to that of Rosenthal and Young, as the cash flow structure is different. In dual listed companies each stock gains a percentage of the cash flows (Royal Dutch Shell 60/40). In our case the stocks get the full 100%. We derived the ratio in two ways. For Dordtsche Petroleum the ratio was derived from the Maxwell Petroleum annual report. For the other cases the ratio is derived from historical stock prices. To calculate the ratio we looked at the average $\frac{P_{hold}}{P_{sub}}$ over the first year of our sample. This ratio is then assumed as the constant ratio at which the stocks should be trading. We picked the first year of the sample as at the time the standard deviation was low and the ratio was fairly constant.

If ε significantly deviates from zero the different tax circumstance, created by the payout policy and the liquidity cause the shares to differ in price. This paper hypothesises that the payout policy and liquidity created this difference.

H1: The difference in payout policy and liquidity caused SSHCs to differ in price.

After finding a constant difference in price, the paper tests if the difference is created, amongst others, by the payout policy that arbitrages the tax advantages, and whether the clientele effect brings the price back to an equilibrium. The progressive dividend tax system, in which dividends were taxed more than capital gains during the 90's, created opportunities to gain a tax advantage by distributing gains as stock dividends, instead of cash dividends. The stock dividends were tax exempt. Where the Subsidiary stocks distributed earnings as cash dividends, three of the five subsidiaries applied a different payout policy, making use of this tax advantage and distributed the dividends in the form of stock dividends. In the empirical discussion on the existence of a tax effect Rosenberg and Marathe (1979) found that high-dividend stocks are punished relative to low-dividend stocks when there is progressive dividend taxation. This indicates that investors don't like dividends when they are taxed more than capital gains. In our sample the stock dividend paying SSHC stocks can be seen as low-

dividend stocks, whilst the Subsidiary stocks can be seen as high-dividend stocks. If the tax-effect hypothesis holds, then the SSHCs can increase value by distributing low-dividends, compared the high-dividend Subsidiaries. This 'dividend premium', or undervaluation, for dividend paying stock is also what Wurgler and Baker find in their dividend catering view. If the Modigliani & Miller irrelevance theory is true the clientele effect will bring the prices back to an equilibrium. This paper expects to find that the SSHC stocks trade at a premium, compared to its fundamental value over a longer period of time. This indicates constant value creation by selection of a particular payout policy. If the SSHC stocks were constantly trading at a discount, this taxation effect would not be there, or the liquidity effect found by Hoogervorst (2006) or the fiscal claim effect, noted in the Calve-Delft annual report would have more effect. This paper hypothesises that the low dividend payout policy of the SSHC stocks created extra value in times of a progressive dividend tax regime.

H2: The DP, MP and Arn stock dividend payout policy increased share value in the previous tax regime.

4.3. Results pricing relation

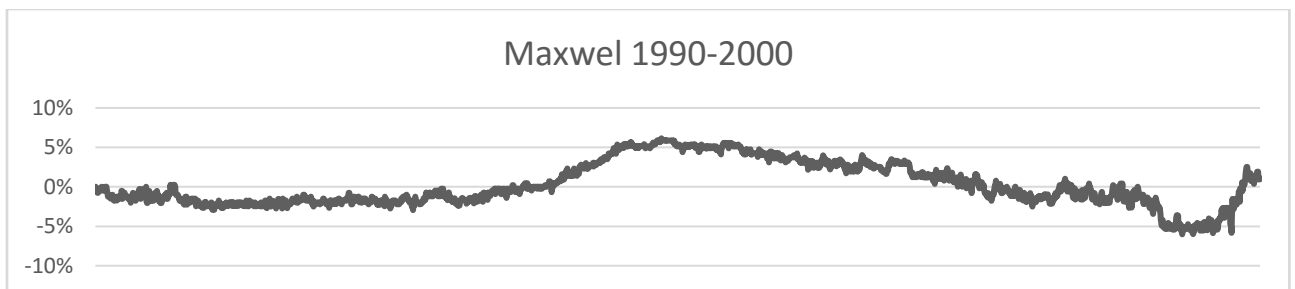
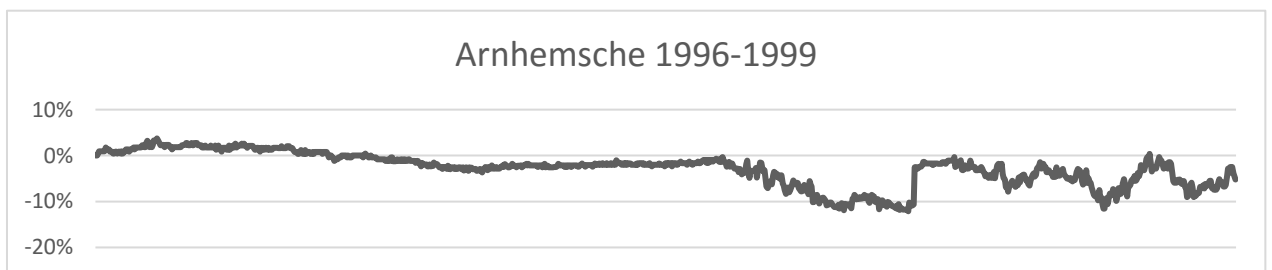
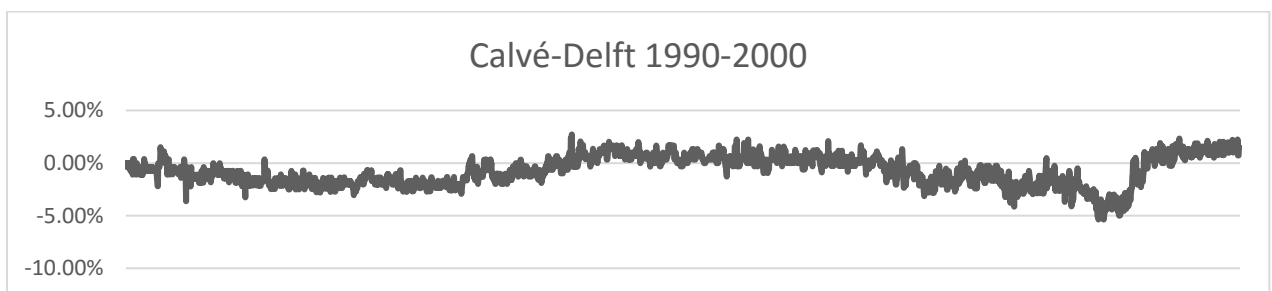
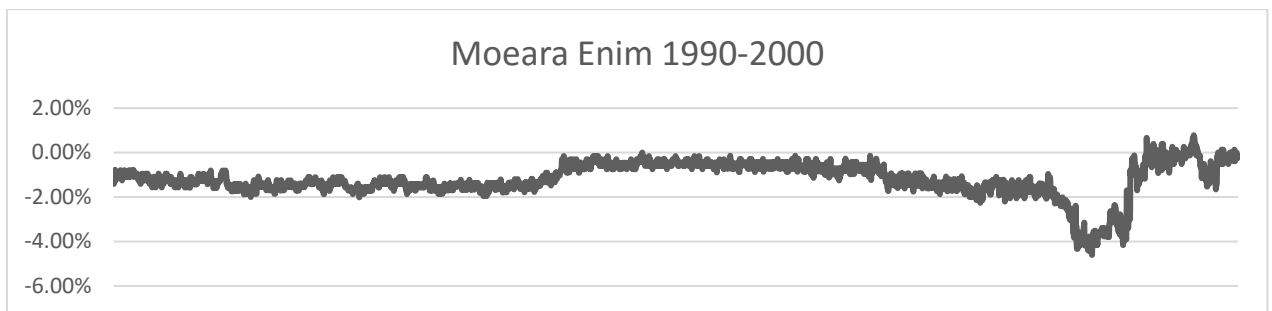
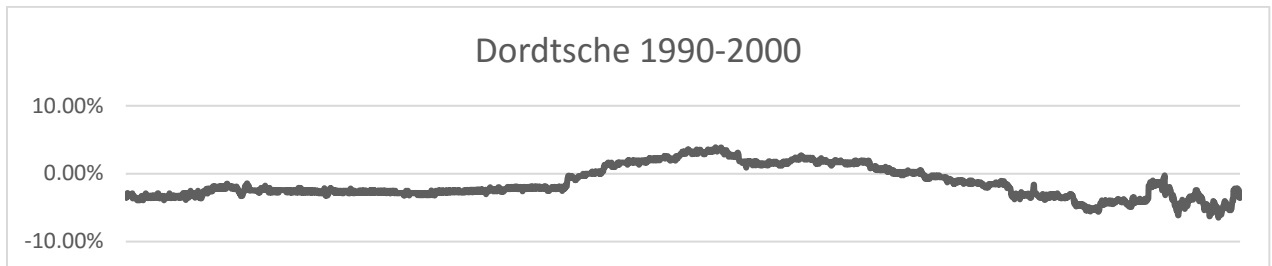
The first and second hypothesis are tested by calculating the Value delta from ϵ throughout the analysed period. Figure 2 shows the log price deviation from parity for all 5 cases.

It can be seen that over the tested period, the deviation from parity constantly fluctuates. When the graph line is $<0\%$, the real share price is undervalued compared to the theoretical share price and the SSHC is trading at a discount. If the graph line is $>0\%$, then the SSHC share price is overvalued, compared to the theoretical share price, and it is trading at a premium. It is also clear that the first half of the 90's the deviation was at a constant level. In the later years the deviation started moving around more.

Table 3 shows the results from a paired sample T-test. The yearly mean log deviation from the fundamental values are shown. For all four cases a negative mean ϵ for the years 1990-1994 is found. From 1994 up to 1997 the negative mean ϵ decreases and in some cases even turns into a positive mean ϵ . This means that, in some of the cases, the share prices started trading at a premium. From 1997 onwards, the deviation starts moving to a large discount again. For all cases the results found are significant.

Figure 2

Graphical description of the deviation from parity for each of the subsidiaries. The graph shows the % deviation from the theoretical value over the tested period.



The table and the graphs clearly show that, over the 11 year period, the price constantly deviated from its theoretical value. From literature it can be argued that this deviation was created by the tax regime and liquidity. As expected, we find a constant deviation and H1 is not rejected.

Table 3

Yearly mean deviation of SSHC stock prices from theoretically predicted stock prices using the formula $P_{sub} * \left(\frac{v_{hold}}{v_{sub}}\right)$. Weekly stock exchange prices for Subsidiary stocks are used for the theoretical prediction. Weekly stock exchange prices are collected from DataStream from January 1990 through December 2000

Year	Dordtsche Petroleum	Moeara Enim	Calvé-Delft	Maxwell Petroleum	Arnhemsche Maatschappij
1990	-0.036	-0.023	0.002	-0.013	N.A
1991	-0.030	-0.031	-0.015	-0.029	N.A
1992	-0.332	-0.031	-0.018	-0.026	N.A
1993	-0.031	-0.034	-0.010	-0.017	N.A
1994	-0.005	-0.014	0.011	0.046	N.A
1995	.035	-0.005	0.014	0.101	N.A
1996	.026	-0.009	0.078	0.069	0.040
1997	.011	-0.023	-0.003	0.034	-0.032
1998	-0.029	-0.041	-0.024	-0.015	-0.093
1999	-0.070	-0.083	-0.041	-0.071	-0.163
2000	-0.066	-0.002	0.020	0.001	-0.147

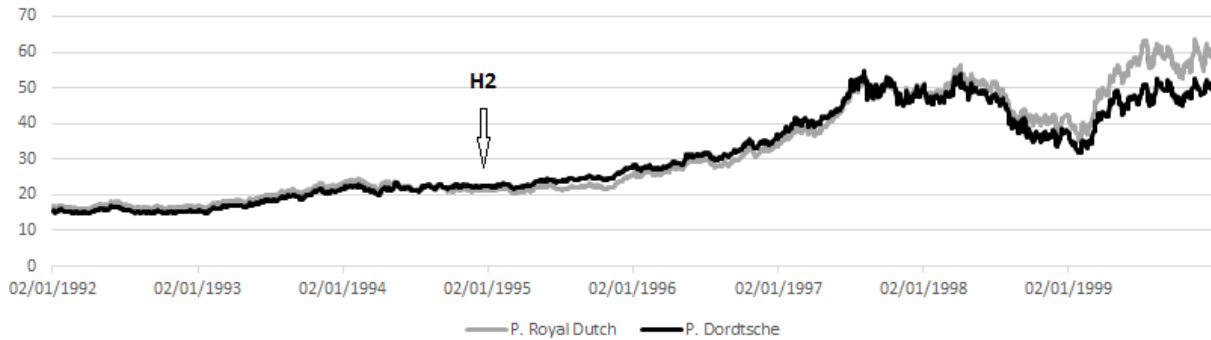
For the cases Calvé-Delft, Dordtsche Petroleum, Maxwell Petroleum and Arnhemsche, we find a positive deviation for some periods of time before the announcement of a possible change in tax regime. These positive deviations were found to be significant. It is interesting to find that Calve-Delft was also trading at a premium, as this SSHC did not distribute stock dividends, which the paper argues are the reason for trading at premium. The positive deviation from theoretical price for the other three subsidiaries is found from the moment they start distributing stock dividends (Dordtsche petroleum in 1994 and Arnhemsche from the start). This analysis clearly shows that the subsidiaries are able to create value by choosing a different payout policy. They are

able to do this because of the difference in dividend taxation and capital gain taxation. Modigliani & Miller argue that this effect only lasts for a short period of time, as the change in policy created shares that are interesting for a different clientele. Our results prove differently. With similar payout policies, investors are indifferent between the shares, and the shares only trade at discount for liquidity reasons. This is seen in the first four years of our data. The moment the three subsidiaries decide to distribute stock dividends, the shares start trading at a premium, as the new payout policy created value. From this moment, Modigliani & Miller argue that a different group of investors, namely the 'taxed individuals', would be interested in the stock. As the stock starts to fall into the hands of this clientele, the premium should disappear and the stock should start trading at a discount again (because of illiquidity). The results, however, find that this premium is maintained for 3 to 4 consecutive years, until knowledge of change in tax regime enters the market. The results also add to the findings of Baker and Wurgler, as they conclude that 'dividends, thus payout policy, are highly relevant to share price, but in different directions at different times' (Baker & Wurgler, 2004). The constant fluctuation between discount and premium show that in some times the different payout policy adds more value than in other periods.

Figure 2 shows the actual price movement between Dortsche Petroleum and the Royal Dutch share. It gives a clear support for H1 and H2. The H1 results found that there was a difference in price due to illiquidity, a Fiscal Claim and tax advantage of payout policy (H2). As expected, it is seen that Dordtsche Petroleum trades at a discount in the early years (because of illiquidity and the existence of a Fiscal Claim). And starts trading at a premium when it changes its payout policy, exploiting the tax advantage.

Figure 2

The price movement between Royal Dutch and Dordtsche petroleum shares. The figure gives a nice overview because of the 1:1 ratio the shares trade at. The arrow (H2) indicates a point in time where Dordtsche Petroleum trades at premium because it exploits the tax advantage.



4.4. Tax effect on share price

After finding that the payout policy created value for the SSHC in the progressive tax system, this paper seeks to find if this premium was created by a tax effect and if the effect decreases as the tax regime changes. Just like other literature finding a tax effect in a regime change, this paper expects to find this tax effect. In the sample period there was a moment in time where investors became aware of an expected change in the tax regime. This makes it possible to look if there is a tax effect on the policy payout, and to quantify the magnitude of this effect. If there were no tax effect, the SSHC would continue trading at the same level, despite the knowledge of their tax advantage disappearing. If there is a tax effect, investors would become indifferent as to the payout policy, as capital gains and dividends would become equally taxed and the premium of subsidiary stocks should turn into a discount (due to the effect of illiquidity and tax claims).

The following model is used to find the effect of dividend tax on the SSHC share price:

$$\frac{P_{hold}}{P_{sub}} = \alpha + \beta 1DummieTax + \varepsilon$$

$\frac{P_{hold}}{P_{sub}}$ is ratio of the share price of the SSHC over the share price of the SSHC at time t.

α is the constant factor. The dummy tax is 0 before the knowledge of change in the tax

regime and 1 after the knowledge of a possible change. If a tax effect exists, a significant result for β_1 should be found.

Different research has been done to find which variables affect asset pricing. Some of these variables are added to our model.

Froot and Dabora (1999) found that pricing of twin stocks is affected by the location of the trades. 'In their paper they assumed that, as twins pool their cash flows, in integrated markets, twin stock should move together'. But Froot and Dabora found the 'price differences between the prices of the twin stocks to be correlated with the markets on which they are most traded'. Hoogervorst also looked at the effect of co-movement with the market on discounts created by the holding structure in Dutch and Belgian companies. Hoogervorst found that the Dutch case, Heineken Holding, 'is not very sensitive to the excess return of various market segments.' But for all the Belgian cases, a significant relation was found between the discount and the market. With similar holding structures, as explained in the Hoogervorst research and similar cash flows backing both the SSHC and Subsidiary company shares, stock co-movement with the market will also be tested in our model.

Amihud and Mendelson (1986) found a relationship between stock return and liquidity. Liquidity is seen as the daily volume of trades for stocks. Amihud (2002) found that realized illiquidity raises expected illiquidity, which in turn raises stock expected returns and lowers stock prices. Investors want to be compensated for the risk that comes with illiquid stocks and expect an illiquidity premium. This results from adverse selection costs and inventory costs (Glosten & Milgrom, 1985). In the market it was well known that the SSHC stocks were far less liquid than their Subsidiary stocks. Liquidity was often mentioned in the media as the reason for the discount (De Rechtspraak, 2010). Hoogervorst looked at the liquidity effect on holding company discounts and found a positive significant relation with liquidity. A liquidity measure will be added to our model. As daily liquidity measure the following model is used

$$ILLIQ = \frac{V}{SO}$$

Where V is the daily trading volume at time t and SO the number of shares outstanding at time t . If $ILLIQ > 1$ than the SSHC stock is very liquid at that point in time and trades more than the shares outstanding. If $ILLIQ < 1$, trading volume is low and liquidity is low. The final model testing the tax effect on the SSHC share price is seen as follows with Liquidity and market co-movement added to the formula.

$$\frac{P_{hold}}{P_{sub}} = \alpha + \beta ILLIQ + \beta MRKTIndex + DummieTax + \varepsilon$$

The model will test if the way dividends are taxed has influence on the company share price.

H3: In the run up to the change in tax regime the tax effect disappeared causing a decrease in share price for the SSHC's.

4.5. Results Short term tax effect

First, I identified news items in the reference period that, if there is a tax effect, should have an adverse effect on the relative value of the SSHC stock due to change in its fiscal status. In the tested period the only difference between the SSHC stock and Subsidiary is the news announcement creating tax advantages/ disadvantages for the SSHC. Two such news announcements were found

1. Decrease in fiscal claim by tax authority (06/12/1999)
2. Change in payout policy: Dordtsche Petroleum declaring stock dividends (14/05/1995)

Decrease in Fiscal Claim

Over an extended period of time, the value of the SSHC's assets gradually increased, due to rolled up (undistributed) dividends received from the Subsidiary. This increment resulted in substantial retained earnings of the SSHC (these value increments were not distributed to the shareholders). This continued for decades, making the cumulative effect of these retained earnings substantial. It was always assumed that, at one point in time, the SSHC would be liquidated, and the retained earnings would have to be distributed to its shareholders as a liquidating dividend. Tax would have to be paid over this amount at that time; called the 'fiscal claim'. For many years, the present value of this fiscal claim was considered small because the situation

had continued for so many years already and early liquidation was considered unlikely. When the tax regime change was announced, and when the SSHC lost their fiscal purpose, the market started to value the tax claim more highly, fearing an earlier unwind of the SSHCs could be expected. The Calve Delft and Maxwell Petroleum annual report stated that the fiscal claim created had a depressing effect on the SSHC share price.

With the new tax regime being implemented in 2001, it became possible for the holding companies to be liquidated in 2006, distributing the retained earnings in a tax free manner, making the fiscal claim equal to zero at that point in time¹. The Dutch tax authorities knew of this instance and did not want to lose out on receiving the fiscal claim. In the run up to the regime change, several investors were secretly in talks with the Dutch Tax authorities about the fiscal claim. On December 6th 1999 trade in several stocks, including Dordtsche Petroleum, Moeara Enim and Calvé-Delft, were put on hold because of price-sensitive information in the market². Later it became apparent that an investor had reached an agreement with the Dutch tax authority about a low priced settlement of the tax claim³. If we find an effect on this event it can be argued that the fiscal claim created a limit to arbitrage, which could be redirected to a corporate tax effect.

This paper tests the existence of a tax effect adding a dummy 1 all twenty days after the trading stocks were put on hold, and a dummy 0 all of the twenty days before the announcement. Table 4 shows the result for the model regression for Calvé-Delft, Dordtsche Petroleum and Moeara Enim.

For all three stocks, a significant result is found for the tax dummy, insisting on a corporate tax effect. Only for Moeara Enim, significant co-movement with the market index is found. No significant effect of liquidity is found. The tax dummy finds that the announcement of a decrease of the fiscal claim increases the stock price. The effect is

¹Staten-Generaal, T. K. d., (1999). *Memorie van Toelichting: Wet Inkomstenbelasting 2001 (Belastingherziening 2001)*, 'S-Gravenhagen: Sdu Uitgevers.

²Trouw, (1999). Amsterdamse effectenbeurs legt handel in zes houdstermaatschappijen stil. *Trouw*, 07 December.

³Volkskrant, (1999). Dresdner sluit deal met fiscus. *Volkskrant*, 11 December .

biggest for Dordtsche Petroleum (1.005) and smallest for Moeara Enim (0.474). The increase in share price is what the paper expected to find, as the fiscal claim was seen as one of the limitations to arbitrage. As the annual reports stated that the fiscal claim caused the shares to trade at a discount relative to the Subsidiary stock, the disappearance of the fiscal claim should have cancelled out the limitation to arbitrage, bringing the share prices back to equilibrium. The results found relate to a corporate tax effect as the Fiscal Claim came from the fund structure and not personal taxation.

Table 4

Regression $\frac{P_{hold}}{P_{sub}} = \alpha + \beta ILLIQ + \beta MRKTIndex + DummieTax$, measuring the tax effect when the stocks were stopped trading because of sensitive information in the market. Standardized coefficients β per variable are shown in the table as well as some model information.

	Calvé-Delft	Moeara Enim	Dordtsche Petroleum
IlliQ	.001	-.070	-1.59
MrktIndex	.056	.459*	-.545
DummieTax	.833*	.474*	1.0057*
R²	.770	.807	.455
Adjusted R²	.751	.791	.410

Stock dividend Dordtsche

On May 14th 1994 SSHC Dordtsche Petroleum brought out the news that they were going to distribute dividends to its shareholders in the form of stock⁴. Due to the holding structure, this onward distributing of dividends as stock would be tax exempt, from this moment forward, compared with the progressive dividend rate applying until then. This is an event where the tax regime stayed the same, but the payout policy was changed. With nothing else changing in the market on this day, a significant change in stock price could be described as a personal tax effect. Maxwell Petroleum, holder of only Dordtsche Petroleum shares should find a similar tax effect relative to the Royal Dutch shares. Wurgler and Baker find that cash dividend class shares trade at a discount to stock dividend class shares in most periods between 1962 and 1989. With

⁴ Berkhout, K., 1994. Keuze-dividend maakt aandelen fiscaal aantrekkelijker; Dordtsche loopt in op 'broer' Olie. *NRC Handelsblad*, 14 May.

this precedent, we have a perfect example where we see two stocks changing their payout policy into a stock dividends from cash dividends and we can measure the effect this had on the share price. This effect can be explained by a personal tax effect as the change in policy was done because of tax advantage reasons for investors⁵.

This paper tests the existence of a tax effect, adding a dummy 1 all twenty days after the announcement of stock-dividend pay-out and a dummy 0 all twenty days before the announcement. Table 5 shows the result for the model regression on Dordtsche Petroleum and Maxwell Petroleum.

Table 5

Regression $\frac{P_{hold}}{P_{sub}} = \alpha + \beta ILLIQ + \beta MRKTIndex + DummieTax$, measuring the tax effect when Dordtsche announced it was going to change the payout policy. Standardized coefficients β per variable are shown in the table as well as some model information

	Dordtsche Petroleum	Maxwell Petroleum
$\beta DummieTax$.874*	.612*
$\beta MrktIndex$	-.043	-.400*
$\beta Illiq$	-.135	N.A. ^a
R²	0.857	.857
Adjusted R²	0.846	.849

^a No trading volume data available

Again a highly significant tax effect is found. The announcement that Dordtsche Petroleum will distribute stock dividends going forward made the stock more attractive for investors and increased the stock price ratio by 0.874 in the case of Dordtsche Petroleum and 0.612 in the case of Maxwell Petroleum. The fact that I find existence of a tax effect adds to the tax effects found in the papers of Auerbach & Hassett and Ayers, Cloyd and Robinson. What is new in these results is that I can connect this tax effect to the payout policy. Wurgler & Baker have shown that payout policy is relevant for share

⁵ Berkhout, K., 1994. Keuze-dividend maakt aandelen fiscaal aantrekkelijker; Dordtsche loopt in op 'broer' Olie. *NRC Handelsblad*, 14 May.

value and can create differences in price. The results found here are in line with the findings of Wurgler & Baker and show that the difference in price is created by changing the payout policy. The value created by the payout policy can be attributed exclusively to a personal tax effect as no other factors changed meaningfully. With different payout policies, the only difference between the existing and former situation is the way the shares are taxed for investors holding them. The results show the magnitude of this tax effect from changes in payout policy. For both Dordtsche Petroleum and Maxwell petroleum a mayor price ratio increase was found, caused by the tax effect.

4.6. Results Long term tax effect

This paper also analysed a possible tax effect resulting from the knowledge in the market of a change in tax regime that would come into effect as of 2001, which would undo the tax advantage of the SSHC stocks. A result of a tax effect here will add to Baker and Wurgler's findings that payout policy relevance differs at different times. The run up period towards the actual change in tax regime in 2001 finds several events from which it should have become clear to the market that the change in regime would come, and thus increased the likelihood that the personal tax advantage of the SSHCs would disappear and the Fiscal Claim became apparent again. On September 16 1999 the 'Memorie van toelichting' for the Wet IB 2001 was published, in which the plans of new tax regime were explained for the public⁶. In this paper this event is not assumed as the breaking point of the possible tax effect, as insiders could have known of the possible change before then. At the 1996 'prinsjesdag' it was already mentioned that the Dutch government was going to look into a new tax regime as of 1997⁷. In May 1997 the Dutch Secretary of Finance, Willem Vermeend, sketched the possible regime change⁸. From this event forward, the market could have anticipated the change in regime and it should be able to find a tax effect for the SSHC stock prices.

⁶ Staten-Generaal, T. K. d., 1999. *Memorie van Toelichting: Wet Inkomstenbelasting 2001 (Belastingherziening 2001)*, 'S-Gravenhagen: Sdu Uitgevers.

⁷ van der Bles, W., 1997. 'Heffing bedrijfsopties is krent in taart die niet wordt gebakken. *Trouw*, 15 August.

⁸ Ackermans, M., 1997. Vermeend verklaart zijn belastingplan. *Volkskrant*, 3 May.

To find the existence of a long term tax effect, data for a three year period from 1996-1998 is taken for all the cases. A tax dummy 1 is added for all the stock prices after May 1997. Table 6 shows the coefficient results for all the cases.

Table 6

This table reports regression estimates for:

$$\frac{P_{hold}}{P_{sub}} = \alpha + \beta ILLIQ + \beta MRKTIndex + DummieTax$$

P_s and P_p are the daily share prices for the Subsidiaries and SSHC's. $Illiq$ is calculated from the daily trading volume and shares outstanding of the SSHC's. And $MRKTIndex$ denotes the market indices on which the stocks are traded. The regression measures the long term tax effect where $DummieTax$ equals 1 the moment a possible change in tax regime enters the market. Top half of the table shows the standardized coefficients β . A * indicates a significant result. The bottom half of the table shows some model statistics.

	Calvé-Delft	Moeara Enim	Dordtsche Petroleum	Maxwell petroleum	Arnhemsch Maatschappij
Illiq	n.a. ^a	-.025	.021	n.a. ^a	0.021
MrktIndex	-.258*	-.485*	-.686*	-.515*	-.185*
DummieTax	-.541*	-.408*	-.322*	-.452*	-.481*
R²	.571	.706	.934	.825	.390
Adjusted R²	.569	.704	.933	.824	.387

^a No data available in Compustat

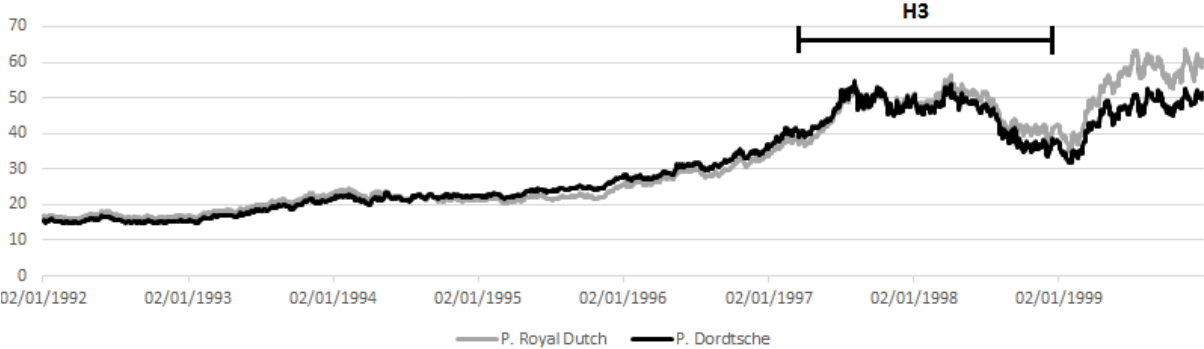
I find a significant negative effect for the tax dummy following the event. The effect seems to be the biggest for Calvé-Delft (-.541) and smallest for Dordtsche Petroleum (-.322). The adverse effect found is in line with our expectations, as the change in tax regime cancelled out the tax advantage of the SSHCs and brought forward again the tax claim, thus making them less attractive for private investors. The tested period sees knowledge entering the market of a possible tax change, whilst the payout policy for the subsidiaries stays the same. The results of a decrease of share price, relative to the Subsidiaries, shows that, with the same payout policy, the SSHC stocks became less attractive in a time where it is uncertain if the current tax advantage will hold in the future. The catering view of dividends finds that dividends are highly relevant for share value, but in different directions at different times. The findings in the table add to this finding, by showing that as the tax advantage disappears, the relevance of choosing a different payout policy disappears. The tax effect exploited by a different payout policy is no longer existent because capital gains and dividends are equally taxed. From this

precedent, it can be concluded that companies can, and should, make use of the tax effect in times of a progressive system to create value by choosing a tailored payout policy. But in times of equal taxes between capital gains and dividends, this tax effect cannot be exploited and the payout policy chosen is less important. Reframing the conclusion of the catering view of dividends: *The existence of a tax effect should not be neglected when determining a payout policy as dividends, and the way they are taxed*, are highly relevant for share value but in different directions at different times.

Figure 3 again shows the price movement between Dortsche Petroleum and Royal Dutch. This time you can see the movement on which H3 focuses highlighted. It is clearly seen that the Dortsche Petroleum shares move from a premium to a discount relative to the Royal Dutch shares. This figure descriptively shows the tax effect I find for (H3). The value creation found in H2, owing to a tax effect, disappears because of changes in the tax regime (H3). As the knowledge of a regime change enters the market, the tax effect disappears and Dortsche Petroleum starts trading at a discount again (due to illiquidity and the Fiscal Claim (H1))

Figure 3

Price movement between Dordtsche Petroleum and Royal Dutch shares. H3 highlights the measured period. It is seen that the Dordtsche share starts trading at a discount from a premium. This shows the disappearance of the tax effect on the share value.



5. Conclusion

In this paper I tested if the choice in payout policy could create value due to a tax effect. Former research had found that the choice in payout policy would either (1) have no effect on the share price (2) decrease value of the share price because of the bird-in-the-hand hypotheses; or (3) create value because of a tax effect. This paper followed

the hypothesis of the latter, and tested the existence of a tax effect on the payout policy. Several papers have been written, endeavouring to find the answer to this question, but still a lot of uncertainty arises around the question. Finding 5 precedents in the Netherlands made it possible to test the tax effect, where stocks with similar cash flows and different payout policies, could be analysed through a period where there was knowledge of a possible change in tax regime.

First the period prior to the entrance of this tax change knowledge was analysed to see if there was a difference in price between the Subsidiary stocks and the SSHC stock (H1). The paper found a constant deviation from parity, which were caused by limitations to arbitrage. Such limitations to arbitrage were the existence of a Fiscal Claim, lack of liquidity and, possibly, the tax effect of payout policy. Secondly the paper tested if the payout policy created such a limitation to arbitrage (H2). Having a tailored payout policy could help exploiting a tax advantage in the Dutch market. The paper found that the three SSHCs, that had a tax efficient payout policy, paying out dividends in the form of stock, traded at a premium prior to the knowledge of a change in tax regime. With everything else constant between the Subsidiary and SSHC shares, this demonstrates that the payout policy created value for the subsidiaries due to a tax effect. Finally the paper tested if the knowledge of a possible change in tax regime entering the market effected the SSHC share price (H3). The possible tax change meant a disappearance of the earlier tax advantage, as both dividends and capital gains would now be taxed equally. If a price ratio decrease is found, this could be explained as a tax effect. The paper finds that in the run up to the regime change, the share prices of the SSHCs started to decline relative to the Subsidiaries shares. This points towards the fact that there was a tax effect on the payout policy, which prior to the knowledge created value, but with the change in tax regime this value creation decreased again.

This paper has shown the existence of a tax effect on the payout policy in a different manner than had been done before. Instead of looking at ex-dividend days or dividend yields and returns it was possible to compare similar stocks with different payout policies over period in which the tax regime changed. This was possible to do due to the special cases that were found in the Netherlands around the close of the 20th century. For further research it would be interesting to look for similar cases in other countries, to test if similar results are found strengthening the findings in this paper.

It would also be interesting to further look at the case tested in this paper doing further research and splitting the difference between the corporate tax effect (Fiscal Claim) and the personal tax effect (payout policy).

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7. Appendix

Table 1

SSHCs

	Stock price	Market Index	Liquidity	Bonds
Calve-Delft	1973 - 2002	AEX	1999 - 2002	Yes
Moeara Enim	1973 - 2003	AEX	1994 - 2003	Yes
Maxwell Petroleum	1973 - 2002	AEX	N.A.	No
Dordtsche Petroleum	1973 - 2001	AEX	1992 - 2001	No
Arnhemsche	1996 - 2000	AEX	1996 - 2000	No

Subsidiaries

	Stock price	Market Index
Royal Dutch Shell	1973 - 2002	AEX
Unilever	1973 - 2002	AEX
Akzo Nobel	1973 - 2002	AEX